

***ABBREVIATED PRELIMINARY ASSESSMENT***

***AKERS MINE***



Malheur National Forest  
Grant County, Oregon

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## EXECUTIVE SUMMARY

Cascade Earth Sciences (CES) performed an Abbreviated Preliminary Assessment for the Akers Mine (Site) to determine the need for further site characterization. The Site waste piles are placed on side slopes and a portion are located within the Windlass Creek floodplain. A Niton XL-722S x-ray fluorescent (XRF) unit was used for *in situ* field screening of the waste piles for any potential contaminants. An Horiba U-22 was used to assess water quality parameters of adit seep water. However, water and sediment samples were not collected.

Three metals exceeded the EPA Region IX Industrial Preliminary Remediation Goals (PRG). The lead PRG [750 milligrams per kilogram (mg/kg)] and iron PRG (100,000 mg/kg) were only exceeded in one soil sample analyzed at the Site. All five soil samples collected from the Site exceeded the arsenic cancer endpoint PRG (2.7 mg/kg) and the non-cancer endpoint PRG (440 mg/kg). It appears as if small fractions of waste rock are entering into Windlass Creek from erosion forces.

Based on the proximity of the Site to Windlass Creek and the elevated concentration of arsenic detected in waste rock at the Site, further investigation is warranted. Specifically, it is recommended that 1) additional soil and waste rock samples be collected with depth for analysis; 2) water, sediment and benthic samples be collected from Windlass and the adit discharge to determine if Windlass Creek has been impacted above both acute and chronic water quality criteria; and 3) a wildlife, plant and fisheries survey be conducted to determine what effects, if any, the Site has had on ecological receptors.

# **ABBREVIATED PRELIMINARY ASSESSMENT AKERS MINE**

## **1.0 INTRODUCTION**

An Abbreviated Preliminary Assessment (APA) was performed by Cascade Earth Sciences (CES) in accordance with the EPA “Guidance for Performing Preliminary Assessments Under CERCLA”, EPA “Improving Site Assessment: Abbreviated Preliminary Assessments” of 1999, the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Superfund Amendments and Reauthorization Act (SARA) of 1986, and the National Contingency Plan as outlined in 40 CFR Parts 300.410(c)(1)(i-v).

The purpose of this investigation was to determine whether or not there is a potential for a release of contaminants to the environment and/or to human health. The purpose of an APA is to determine whether further site characterization is warranted. A Niton XL-722 Dual Source x-ray fluorescent (XRF) and Horiba U-22 were utilized to help in the preliminary screening of this site.

## **2.0 SITE DESCRIPTION, OPERATIONAL HISTORY, AND WASTE CHARACTERISTICS**

The Akers Mine (Site) is located approximately 7 miles northwest of Bates, Oregon, near Forest Service Road 2055-279. The Site can be reached by hiking approximately 1500 feet up a revegetated access road from Road 279. The legal description for the site is; Latitude: 44°40’5”, Longitude: 118°36’12”, Sec 27, T 10 S, R 34 E, USGS Quadrangle Map - Hungry Mountain. The site is situated adjacent to Windlass Creek. The Site is located in the Greenhorn Mining District.

The Site consists of an adit, two small pits, and a large waste rock pile. The adit is located approximately 40 feet west of Windlass Creek. The portal to the adit is open and the adit opens to the east toward Windlass Creek (Photograph 1). Water was observed on the floor of the adit and flowing out of the adit into Windlass Creek. One of the pits is located north of the adit on the west side of Windlass Creek. The other is located on the east side. A small gangue pile was associated with the pit north of the adit. The waste rock pile is located adjacent to and trends south along Windlass Creek for approximately 130 feet. Windlass Creek crosses in front of the waste pile through a wooden culvert. Trees and bushes were observed growing on the waste rock pile (Photograph 2). There are no structures at the Site or in the area. Approximately 0.25 acres are disturbed on the Site according to the USFS survey. During the site visit, a rotten egg odor was detected while analyzing the waste rock pile; this likely indicates the presents of sulfurous compounds in the waste rock.

The waste material is from hard rock mining and is yellowish in color. No information on production, mine history, host rock, or ore minerals was available.

Currently, the site is inactive.

## **3.0 SITE SAMPLING AND TEST RESULTS**

A Niton XL-722S Dual Source was used to assess the waste piles for potential contamination. *In situ* testing was performed on the Site per EPA Method 6200. Surface soils were removed to approximately 4 to 6 inches below grade in order to get below highly oxidized surface layers. Rocks, debris and other deleterious materials were removed. The soil was worked to gain a flat surface area on which to set the

Niton. A total of five sample points were analyzed from the waste pile. Copies of Niton results are presented in Appendix B. Copies of field notes are presented in Appendix C.

No surface water, sediment, or adit discharge samples were collected and analyzed.

The following constituents exceeded EPA Region IX PRG industrial levels.

Location	Constituent	Results (mg/kg)	PRG (mg/kg)
Waste Rock Pile 1 (east side - top)	Arsenic	647	2.7*
Waste Rock Pile 1 (east side - top)	Lead	3950	750
Waste Rock Pile 1 (middle - top)	Arsenic	971	2.7*
Waste Rock Pile 1 (middle - top)	Iron	129,000	100,000
Waste Rock Pile 1 (west side - top)	Arsenic	898	2.7*
Waste Rock Pile 1 (middle of slope)	Arsenic	497	2.7*
Waste Rock Pile 1 (toe of slope)	Arsenic	516	2.7*

\* - the cancer endpoint for arsenic is 2.7 mg/kg and the noncancer endpoint for arsenic is 440 mg/kg.

One water quality assessment was collected using a Horiba U-22 from the seep emanating from open adit (Photograph 1). Water quality parameters assessed were pH, specific conductance, turbidity, dissolved oxygen (DO), temperature, total dissolved solids (TDS), and oxygen reduction potential (ORP). Results of the adit seep water quality assessment are presented below.

Parameter	Units	Results
PH	standard units	8.51
Specific Conductance	millisiemens/centimeter	0.230
Turbidity	nephelometric turbidity units	140
Dissolved Oxygen	milligrams per liter	7.28
Temperature	degrees Celsius	7.88
Total Dissolved Solids	milligrams per liter	150
Oxygen Reduction Potential	millivolts	211

It is apparent that waste material from the Site is entering Windlass Creek. The ramification from this material entering an aquatic environment is unknown at this time.

#### 4.0 SUMMARY

A portion of the Akers Mine waste rock pile lies within the flood plain of Windlass Creek. In addition, Windlass Creek flows through the lower portion of the waste rock pile via a partially buried wooden culvert. It was apparent erosion forces are contributing some material to Windlass Creek. The Site is not near any residential areas or drinking water wells.

The constituents of concern that exceeded EPA Region IX industrial levels in soil were arsenic, iron and lead. At this time, it is unclear as to any impacts to the aquatic environment.

#### 5.0 RECOMMENDATION

Based on the *in situ* screening of the waste rock pile with the Niton XRF unit and the proximity of the waste piles to Windlass Creek, additional investigation is warranted. As part of this investigation, surface water and pore space water samples should be collected. In addition to analyzing the water samples for the EPA target analyte list (TAL) for total metals, field parameter readings pH, conductivity, turbidity, dissolved oxygen, temperature, total dissolved solids, and oxygen reduction potential should be collected.

Benthic and sediment samples should be collected from Windlass Creek and analyzed for the total metals. The waste rock piles should be sampled with depth in order to determine the lateral and vertical extent of impacted material. Background soil samples should also be collected from undisturbed areas. All soil and waste rock samples should be analyzed for the TAL for total metals, acid-base accounting (ABA), and pH. In addition, a wildlife, plant and fisheries survey should be conducted to determine what effects, if any, the Site has had on ecological receptors.

## REFERENCES

Brooks, Howard C. and Ramp Len. (1968) *Gold and Silver in Oregon*. State of Oregon Department of Geology and Mineral Industries Bulletin 61.

State of Oregon Department of Geology and Mineral Industries (1941). *Oregon Metal Mines Handbook*. Bulletin No. 14-B.

United States Department of Agriculture, Forest Service. (2001) *Abandoned Mined Lands Work Group Site Descriptions and Data*.

United States Geological Survey, 1988, *Topographic Map of the Vinegar Hill Quadrangle*, USGS, Reston, Virginia

# **APPENDIX A**

## **ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST**

## ABBREVIATED PRELIMINARY ASSESSMENT CHECKLIST

This checklist can be used to help the site investigator determine if an Abbreviated Preliminary Assessment (APA) is warranted. This checklist should document the rationale for the decision on whether further steps in the site investigation process are required under CERCLA. Use additional sheets, if necessary.

**Checklist Preparer:** Dustin Wasley, PE, Managing Engineer November 14, 2002  
 (Name/Title) (Date)

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 (E-Mail Address)

**Site Name:** Akers Mine  
**Previous Names (if any):** Whale / LVIC lode claims: "Porpoise Adit"

**Site Location:** The site is located approximately 7 miles northeast of Bates, Oregon on FS Road 2055-279. The site is located near the riparian area of Windlass Creek.

**Legal Description:** Latitude: 44°40'5" Longitude: 118°36'12"

**Describe the release (or potential release) and its probable nature:** The waste rock pile is located in the floodplain of Windlass Creek. Windlass Creek runs adjacent to and through portions of the waste rock pile. A seep emanates from the adit, which eventually discharges to Windlass Creek above the waste rock pile. The following table outlines the metals that exceed industrial levels of the PRGs.

Location	Constituent	Results (mg/kg)	PRG (mg/kg)
Waste Rock Pile 1 (east side - top)	Arsenic	647	2.7*
Waste Rock Pile 1 (east side - top)	Lead	3950	750
Waste Rock Pile 1 (middle - top)	Arsenic	971	2.7*
Waste Rock Pile 1 (middle - top)	Iron	129,000	100,000
Waste Rock Pile 1 (west side - top)	Arsenic	898	2.7*
Waste Rock Pile 1 (middle of slope)	Arsenic	497	2.7*
Waste Rock Pile 1 (toe of slope)	Arsenic	516	2.7*

\* - the cancer endpoint for arsenic is 2.7 mg/kg and the noncancer endpoint for arsenic is 440 mg/kg.

### Part 1 - Superfund Eligibility Evaluation

If All answers are "no" go on to Part 2, otherwise proceed to Part 3	YES	NO
1. Is the site currently in CERCLIS or an "alias" of another site?		<b>X</b>
2. Is the site being addressed by some other remedial program (Federal, State, or Tribal)?		<b>X</b>
3. Are the hazardous substances potentially released at the site regulated under a statutory exclusion (i.e., petroleum, natural gas, natural gas liquids, synthetic gas usable for fuel, normal application of fertilizer, release located in a workplace, naturally occurring, or regulated by the NRC, UMTRCA, or OSHA)?		<b>X</b>
4. Are the hazardous substances potentially released at the site excluded by policy considerations (i.e., deferred to RCRA corrective action)?		<b>X</b>
5. Is there sufficient documentation to demonstrate that no potential for a release that could cause adverse environmental or human health impacts exist (i.e., comprehensive remedial investigation equivalent data showing no release above ARAR's, completed removal action, documentation showing that no hazardous substance release have occurred, or an EPA approved risk assessment completed)?		<b>X</b>



Please explain all “yes” answer(s). \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

## **Part 2 - Initial Site Evaluation**

For Part 2, if information is not available to make a “yes” or “no” response, further investigation may be needed. In these cases, determine whether an APA is appropriate. Exhibit 1 parallels the questions in Part 2. Use Exhibit 1 to make decisions in Part 3.

<b>If the answer is “no” to any questions 1, 2, or 3, proceed directly to Part 3.</b>	<b>YES</b>	<b>NO</b>
1. Does the site have a release or a potential to release?	X	
2. Does the site have uncontained sources containing CERCLA eligible substances?	X	
3. Does the site have documented on-site, adjacent, or nearby targets?	X	

<b>If the answers to questions 1, 2, and 3 above were all “yes” then answer the questions below before proceeding to Part 3.</b>	<b>YES</b>	<b>NO</b>
4. Does documentation indicate that a target (i.e., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site?		X
5. Is there an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site?	X	
6. Is there an apparent release and no documented on-site targets or targets immediately adjacent to the site, but there are nearby targets (i.e., targets within 1 mile)?	X	
7. Is there no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site?		X

**Notes:**

## EXHIBIT 1

### SITE ASSESSMENT DECISION GUIDELINES FOR A SITE

Exhibit 1 identifies different types of site information and provides some possible recommendations for further site assessment activities based on that information. You will use Exhibit 1 in determining the need for further action at the site, based on the answers to the questions in Part 2. Please use your professional judgment when evaluating a site. Your judgment may be different from the general recommendations for a site given below.

Suspected/Documented Site Conditions		APA	FULL PA	PA/SI	SI
1. There are no releases or potential to release.		Yes	No	No	No
2. No uncontained sources with CERCLA -eligible substances are present on site.		Yes	No	No	No
3. There are no on-site, adjacent, or nearby targets		Yes	No	No	No
4. There is documentation indicating that a target (i.e., drinking water wells, drinking surface water intakes, etc.) has been exposed to a hazardous substance released from the site.	Option 1: APA SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	No
5. There is an apparent release at the site with no documentation of exposed targets, but there are targets on site or immediately adjacent to the site.	Option 1: APA SI	Yes	No	No	Yes
	Option 2: PA/SI	No	No	Yes	N/A
6. There is an apparent release and no documented on-site targets and no documented immediately adjacent to the site, but there are nearby targets. Nearby targets are those targets that are located within 1 mile of the site and have a relatively high likelihood of exposure to a hazardous substance migrating from the site.		No	Yes	No	No
7. There is no indication of a hazardous substance release, and there are uncontained sources containing CERCLA hazardous substances, but there is a potential to release with targets present on site or in proximity to the site.		No	Yes	No	No

### **Part 3 - EPA Site Assessment Decision**

When completing Part 3, use Part 2 and Exhibit 1 to select the appropriate decision. For example, if the answer to question 1 in Part 2 was “no,” then an APA may be performed and the “NFRAP” box below should be checked. Additionally, if the answer to question 4 in Part 2 is “yes,” then you have two options (as indicated in Exhibit 1): Option 1 -- conduct an APA and check the “Lower Priority SI” or “Higher Priority SI” box below; or Option 2 -- proceed with a combined PA/SI assessment.

<b>Check the box that applies based on the conclusions of the APA:</b>	
<input type="checkbox"/> NFRAP	<input type="checkbox"/> Refer to Removal Program – further site assessment needed
<input checked="" type="checkbox"/> Higher Priority SI	<input type="checkbox"/> Refer to Removal Program – NFRAP
<input type="checkbox"/> Lower Priority SI	<input type="checkbox"/> Site is being addressed as part of another CERCLIS site
<input type="checkbox"/> Defer to RCRA Subtitle C	<input type="checkbox"/> Other: _____
<input type="checkbox"/> Defer to NRC	
Regional EPA Reviewer: _____	
Print Name/Signature	Date

**PLEASE EXPLAIN THE RATIONALE FOR YOUR DECISION:**

The lead and iron PRG were exceeded in one soil sample analyzed at the Site; and all five soil samples analyzed exceeded the arsenic cancer and non-cancer endpoint PRG. It appears as if a small fraction of waste rock is entering into Windlass Creek from erosion forces. Based on the proximity of the Site to Windlass Creek and the elevated levels of metals detected in waste rock at the Site, a Site Inspection is warranted.

**NOTES:**

The site and waste rock pile are located on moderately steep side slopes. Based on this, a track mounted drill rig will be required to collect soil samples for laboratory evaluation and to determine the volume of material on-site.

## **APPENDIX B**

### **PHOTOGRAPHS**



**Photograph 1: Akers Mine. Collecting adit seep water parameters from water in the open adit (Photograph by John Martin, CES, October 21, 2002, 13:44).**



**Photograph 2: Akers Mine. Waste pile , southeast of open adit (Photograph by John Martin, CES, October 21, 2002, 14:12).**





**Photograph 3: Akers Mine. Collecting water parameters from Windlass Creek below the waste rock pile. Note the wooden culvert in which the creek flows through. (Photograph by John Martin, CES, October 21, 2002)**



**Photograph 4: Akers Mine. Face of waste rock pile located in the floodplain of Windlass Creek (Photograph by John Martin, CES, October 21, 2002).**